Control of stem cell fate
Early immune cells created from embryonic stem cells

CIRM authors: Zoran Galic, Aparna Subramaniana, Jerome Zack

Researchers at UC, Los Angeles have created cells that go on to form normal T cells out of human embryonic stem cells. What's more, these cells were grown in the absence of animal feeder cells, which are usually needed to sustain embryonic stem cells. Avoiding potential contamination by such feeder cells is an important step in generating cells that can be transplanted into people. The researchers describe a series of steps that drive human embryonic stem cells to begin developing as T cells. When they transplanted the cells into mice with human thymus tissue, where T cells normally mature, those cells did mature into normal adult T cells. In addition, the group inserted genes into their immature T cells before transplantation and saw evidence that those genes were active in the mature, transplanted cells. This work, which was published in the October 30 online issue of *Stem Cells* brings researchers closer to creating cells that can be transplanted into people as a therapy for disorders of the immune system, including HIV/AIDS.

Related Information: Stem Cell paper, The Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at UCLA , Funding grant summary, Zack bio

Understanding stem cell biology
Origin of blood stem cells found to be in the lining of blood vessels
CIRM authors: Ann Zovein

Researchers at UC, Los Angeles have found that blood-forming stem cells in mice have their origins in the endothelial cells that line blood vessels during mid-gestation. These cells eventually move to the bone marrow where they generate all the cells of the blood system throughout life. Researchers have long known that blood-forming stem cells arise from the blood vessels, but didn't know exactly which cell type acted as the source. Now that the source is know, the researchers want to learn what signals those endothelial cells to begin producing blood-forming stem cells. This information could eventually help researchers learn how to create those stem cells in the lab and maintain the cells in the stem cell state rather than forming mature cell types. Currently, it isn't possible to grow blood stem cells in large quantity in the lab. Having a source of these cells would be useful for bone marrow transplants to treat cancer or for research purposes. The work was published in the December 4 issue of *Cell Stem Cell*.

Related Information: Cell Stem Cell paper, Press release,The Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at UCLA , Funding grant summary

See all research summaries

210 King Street, San Francisco, CA 94107 ♦ Phone: (415) 396-9100 ♦ Fax: (415) 396-9141
Web Address: www.cirm.ca.gov ♦ E-Mail: info@cirm.ca.gov